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EXAMINER
KIM, DAVID S

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/608,657	ARECCO ET AL.	
	Examiner	Art Unit	
	David S. Kim	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 June 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Europe on 01 July 1999. It is noted, however, that applicant has not filed a certified copy of the 99112552.7 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

2. The foreign language reference in the IDS (Paper No. 4) has been considered as best understood.

Specification

3. The disclosure is objected to because of the following informalities:

Throughout the specification, there appears to be minor typographical errors such as "is used" instead of "is not used" on page 17, line 17; "$\lambda_{x,p}$, $\lambda_{y,p}$" instead of "$\lambda_{x,w}$, $\lambda_{y,w}$" on page 18, line 8; "8" instead of "48" on page 20, line 9; missing end parentheses on page 20; "26b" instead of "25b" on page 23, line 11; "y,w" instead of "x,w" on page 28, line 14; "x,p" and "y,p" instead of "x,w" and "y,w" on page 30, line 22; "wx, xp" instead of "x,p" on page 30, line 23; "$\lambda_{x,w}$, $\lambda_{y,p}$, $\lambda_{y,w}$" instead of "$\lambda_{x,p}$, $\lambda_{y,p}$" on page 32, line 4; and "$\lambda_{y,p}$ and $\lambda_{y,p}$" instead of "$\lambda_{x,p}$ and $\lambda_{y,p}$" on page 35, lines 15-16. This is not an exhaustive list but is mentioned to expedite a compact examination process.

Throughout the specification, there appears to be discrepancies with the drawings, such as the usage of "first optical" instead of "second optical" on page 13, line 2; "first" instead of "second" on page 13, line 4; "second optical" instead of "first optical" on page 13, line 6; and "and" instead of "or" on page 13, lines 8, 11, 21, and 23; reference characters "6-13" on page 24, line 2, which do not correspond to transponders; and an inaccurate table on page 24. This is not an exhaustive list but is mentioned to expedite a compact examination process.

Appropriate correction is required.

Claim Objections

4. **Claims 13 and 15-16** are objected to because of the following informalities:

In claim 13, line 13, it seems that "condition the" is used where "condition, the" may be intended.

In claim 15, line 5, it seems that "information has" is used where " information that has" may be intended.

In claim 16, line 6, it seems that "bypass a remaining" is used where "bypass remaining" may be intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. **Claims 14** is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "a first receiving transponder optically coupled to the *second* optical carrier," does not reasonably provide enablement for "a first receiving transponder optically coupled to the *first* optical carrier" (lines 7-8). Also, while being enabling for "a second receiving transponder optically coupled to the *second* optical carrier," does not reasonably provide enablement for "a second receiving transponder optically coupled to the *first* optical carrier" (8-9). Also, while being enabling for "a third receiving transponder optically coupled to the *first* optical carrier," the specification does not reasonably provide enablement for "a third receiving transponder optically coupled to the *second* optical carrier" (lines 10-11). Moreover, while being enabling for connecting "the optical transmitter to the first transmitting transponder *or* to the third transmitting transponder," the specification does not reasonably provide enablement for connecting "the optical transmitter to the first transmitting transponder

and to the third transmitting transponder" (lines 13-14). Finally, while being enabling for connecting "the third receiving transponder to the optical receiver *or* to the second transmitting transponder," the specification does not reasonably provide enablement for connecting "the third receiving transponder to the optical receiver *and* to the second transmitting transponder" (lines 15-16). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The drawings display a first receiving transponder optically coupled to the *second* optical carrier. Accordingly, it is indefinite why one would couple the first receiving transponder to the *first* optical carrier. In lines 7-8, it seems that "first optical" is used where "second optical" may be intended.

The drawings display a second receiving transponder optically coupled to the *second* optical carrier. Accordingly, it is indefinite why one would couple the second receiving transponder to the *first* optical carrier. In line 9, it seems that "first" is used where "second" may be intended.

The drawings display a third receiving transponder optically coupled to the *first* optical carrier. Accordingly, it is indefinite why one would couple the third receiving transponder to the *second* optical carrier. In line 11, it seems that "second optical" is used where "first optical" may be intended.

The drawings display connecting an optical transmitter to the first transmitting transponder *or* to the third transmitting transponder. Accordingly, it is indefinite how one would connect an optical transmitter to the first transmitting transponder *and* to the third transmitting transponder. Additionally, the drawings display connecting the third receiving transponder to the optical receiver *or* to the second transmitting transponder. Accordingly, it is indefinite how one would connect the third receiving transponder to the optical receiver *and* to

the second transmitting transponder. In lines 13 and 16, it seems that "and" is used where "or" may be intended.

7. **Claims 15** is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for connecting "the first receiving transponder to the third transmitting transponder *or* to the other receiver," the specification does not reasonably provide enablement for connecting "the first receiving to the third transmitting transponder *and* to the other receiver" (lines 11-12). Also, while being enabling for connecting "the other optical transmitter to the second transmitting transponder *or* to the fourth transmitting transponder," the specification does not reasonably provide enablement for connecting "the other optical transmitter to the second transmitting transponder *and* to the fourth transmitting transponder" (lines 13-14). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The drawings display connecting the first receiving transponder to third transmitting transponder *or* to the other receiver. Accordingly, it is indefinite how one would connect the first receiving transponder to the third transmitting transponder *and* to the other receiver. Additionally, the drawings display connecting another optical transmitter to the second transmitting transponder *or* to the fourth transmitting transponder. Accordingly, it is indefinite how one would connect another optical transmitter to the second transmitting transponder *and* to the fourth transmitting transponder. In lines 12 and 14, it seems that "and" is used where "or" may be intended.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1-3, 6-7, and 12** are rejected under 35 U.S.C. 102(b) as being anticipated by Cadeddu et al. (U.S. Patent No. 5,647,035).

Regarding claim 1, Cadeddu et al. discloses:

An autoprotected optical communication system (Figs. 1-2), comprising:

a first optical carrier (optical fiber 3A in Figs. 1-2) configured to transport optical signals in a first direction;

a second optical carrier (optical fiber 3B in Figs. 1-2) configured to transport optical signals in a second direction that is opposite to the first direction (clockwise in fiber 3A and counterclockwise in fiber 3B in Figs. 1-2); and

a plurality of nodes (nodes 2A-2F in Figs. 1-2) connected along the first optical carrier and the second optical carrier to form bidirectional links, the plurality of nodes communicating in pairs (pairs of nodes in Figs. 1-2), one of the pairs defining a working link (working links shown in Fig. 1) associated with a portion of the first optical carrier and a portion of the second optical carrier and being configured to exchange optical signals using a first wavelength (λ_1 in Fig. 1) on the first optical carrier (fiber 3A in Fig. 1) and a second wavelength (λ_2 in Fig. 1) that is different from the first wavelength (λ_1 in Fig. 1) on the second optical carrier (fiber 3B in Fig. 1) during a normal condition, the one pair of nodes being configured (Fig. 2) to exchange optical signals using the first wavelength (λ_1 in Fig. 2) on the second optical carrier (fiber 3B in Fig. 2) and the second wavelength (λ_2 in Fig. 2) on the first optical carrier (fiber 3A in Fig. 2) during a failure condition.

Regarding claim 2, Cadeddu et al. discloses:

The system of claim 1, wherein each of the plurality of nodes selectively uses a predetermined subset of wavelengths (λ1-λ2 in Figures) within a set of transmission wavelengths (λ1-λ2 in Figures), each of the plurality of nodes comprising:

a plurality of optical add/drop multiplexers (ADMs 13 in Figs. 3-6) serially connected to the first optical carrier and the second optical carrier, respectively, each of the optical add/drop multiplexers configured to selectively perform at least one of adding the subset of wavelengths to the first optical carrier and to the second optical carrier, dropping the subset of wavelengths from the first optical carrier and the second optical carrier, and bypassing remaining wavelengths of the set of transmission wavelengths.

Regarding claim 3, Cadeddu et al. discloses:

The system of claim 1, wherein each of the plurality of nodes comprises:

an optical transmitter (transmitters 14B and 15A in Figs. 3-6);

an optical receiver (receivers 14A and 15B in Figs. 3-6); and

a reconfigurable optical switch unit (switches 11A-11B and 12A-12B in Figs. 3-6) selectively coupling the optical transmitter and the receiver to the first optical carrier and the second optical carrier.

Regarding claim 6, claim 6 is a method claim that corresponds largely to the system claim 1. Therefore, the recited means in system claim 1 read on the corresponding steps in method claim 6. Claim 6 also includes limitations absent from claim 1. These limitations are:

an optical ring network; and

detecting a failed link among the bidirectional links.

Cadeddu et al. also discloses an optical ring network (Figs. 1-2) and such detecting (col. 7, lines 63-64).

Regarding claim 7, Cadeddu et al. discloses:

The method of claim 6, further comprising:

using a predetermined subset of wavelengths (λ1-λ2 in Figures) within a set of transmission wavelengths (λ1-λ2 in Figures) carried by the first optical carrier and the second optical carrier, wherein the step of exchanging includes optically separating (demultiplexers 10A-10B in Figs. 3-6), at each node of the plurality of nodes, each wavelength of the subset of wavelengths from the set of transmission wavelengths.

Regarding claim 12, claim 12 is a method claim that corresponds to system claim 3. Therefore, the recited means in system claim 3 read on the corresponding steps in method claim 12.

10. **Claims 1-2 and 6-11** are rejected under 35 U.S.C. 102(a) as being anticipated by Shiragaki et al. (European Patent Application EP 920153 A2).

Regarding claim 1, Shiragaki et al. discloses:

An autoprotected optical communication system (Figures), comprising:

a first optical carrier (ring 101 in Fig. 8) configured to transport optical signals in a first direction;

a second optical carrier (ring 102 in Fig. 8) configured to transport optical signals in a second direction that is opposite to the first direction (clockwise in ring 101 and counterclockwise in ring 102 in Fig. 8); and

a plurality of nodes (nodes A and B in Fig. 8) connected along the first optical carrier and the second optical carrier to form bidirectional links, the plurality of nodes communicating in pairs (pairs of nodes in Figures), one of the pairs defining a working link (working link in Fig. 11A) associated with a portion of the first optical carrier and a portion of the second optical carrier and being configured to exchange optical signals using a first wavelength (λ1 in Fig. 8) on the first optical carrier (ring 101 in Fig. 8) and a second wavelength (λ3 in Fig. 8) that is different from the first wavelength (λ1 in Fig. 8) on the second optical carrier (ring 102 in Fig. 8) during a normal condition, the one pair of nodes being configured (Fig. 10) to exchange optical signals

using the first wavelength (λ1 in Fig. 10) on the second optical carrier (ring 102 in Fig. 10) and the second wavelength (λ3 in Fig. 10) on the first optical carrier (ring 101 in Fig. 10) during a failure condition.

Regarding claim 2, Shiragaki et al. discloses:

The system of claim 1, wherein each of the plurality of nodes selectively uses a predetermined subset of wavelengths (λ1 and λ3 in Fig. 10) within a set of transmission wavelengths (λ1-λ4 in Fig. 10), each of the plurality of nodes comprising:

a plurality of optical add/drop multiplexers (Fig. 10) serially connected to the first (ring 101 in Fig. 10) optical carrier and the second optical carrier (ring 102 in Fig. 10), respectively, each of the optical add/drop multiplexers configured to selectively perform at least one of adding the subset of wavelengths to the first optical carrier and to the second optical carrier, dropping the subset of wavelengths from the first optical carrier and the second optical carrier, and bypassing remaining wavelengths (λ2 and λ4 in Fig. 10) of the set of transmission wavelengths.

Regarding claim 6, claim 6 is a method claim that corresponds largely to the system claim 1. Therefore, the recited means in system claim 1 read on the corresponding steps in method claim 6. Claim 6 also includes limitations absent from claim 1. These limitations are:

an optical ring network; and

detecting a failed link among the bidirectional links.

Shiragaki et al. also discloses an optical ring network (Figures) and such detecting (col. 13, line 48 and col. 14, line 4).

Regarding claim 7, claim 7 is a method claim that corresponds largely to the system claim 2. Therefore, the recited means in system claim 2 read on the corresponding steps in method claim 7. Claim 7 also includes a limitation absent from claim 2. This limitation is:

optically separating *each* wavelength of the respective subset of wavelengths from the set of transmission wavelengths.

Shiragaki et al. also discloses such separating (demultiplexers in Figures).

Regarding claim 8, Shiragaki et al. discloses:

The method according to claim 6, wherein the step of detecting comprises:

verifying, in each of the plurality of nodes and for each wavelength in the set of wavelengths, whether the optical signals are received (col. 7, lines 15-19, verification of signal reception is inherently part of monitoring the BER).

Regarding claim 9, Shiragaki et al. discloses:

The method according to claim 6, wherein the step of detecting comprises:

verifying, in each of the plurality of nodes and for each wavelength in the set of wavelengths, whether the optical signals are degraded (col. 7, lines 15-19).

Regarding claim 10, Shiragaki et al. discloses:

The method according to claim 6, wherein the step of detecting comprises:

verifying, in each of the plurality of nodes and for each wavelength in the set of wavelengths, whether the optical signals include a failure message (col. 7, lines 41-51).

Regarding claim 11, Shiragaki et al. discloses:

The method of claim 6, further comprising:

transmitting a failure message (col. 7, lines 15-51, OAM frame) between the nodes in the one pair based upon at least one of non-receipt of the optical signals and receipt of the optical signals that are degraded (col. 7, lines 15-51).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claims 3-4 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiragaki et al. in view of Cadeddu et al.

Regarding claim 3, Shiragaki et al. discloses:

The system of claim 1, wherein each of the plurality of nodes comprises:

a reconfigurable optical switch unit (protection switches and path switches in Figures) selectively coupling a signal input means (inputs to protection switches for transmitting in Figures) and a signal output means (outputs from protection switches for receiving in Figures) to the first optical carrier and the second optical carrier.

Shiragaki et al. does not expressly disclose:

said signal input means comprising an optical transmitter; and

said signal output means comprising an optical receiver.

However, Cadeddu et al. also teaches such input means comprising optical transmitters (Cadeddu et al., transmitters 14B and 15A in Figs. 3-6) and such output means comprising optical receivers (Cadeddu et al., receivers 14A and 15B in Figs. 3-6). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the inputs of Shiragaki et al. comprise transmitters and the outputs of Shiragaki et al. comprise receivers, as taught in Cadeddu et al. One of ordinary skill in the art would have been motivated to do this since transmitters and receivers are inherently necessary to generate and process optical signals in the nodes of Shiragaki et al. in view of Cadeddu et al.

Regarding claim 4, Shiragaki et al. in view of Cadeddu et al. discloses:

The system of claim 3, wherein each of the plurality of nodes comprises:

a plurality of information insertion devices (monitor circuits and protection switches in Figures) optically coupled to the optical transmitter and configured to insert signalling information (col. 6, lines 1-4) into the optical signals; and

a plurality of information extraction devices (monitor circuits and protection switches in Figures) optically coupled to the optical receiver and configured to extract signalling information from the optical signals (col. 6, lines 41-53).

Regarding claim 12, claim 12 is a method claim that corresponds to system claim 3. Therefore, the recited means in system claim 3 read on the corresponding steps in method claim 12.

13. **Claim 5 and 13-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiragaki et al. in view of Cadeddu et al. as applied to claim 4 above, and further in view of Karasan et al. ("Optical restoration at the wavelength-multiplex-section level in WDM mesh networks").

Regarding claim 5, Shiragaki et al. in view of Cadeddu et al. discloses:

The system of claim 4, wherein the plurality of information insertion devices (monitor circuits and protection switches in Figures) and the plurality of information extraction devices (monitor circuits and protection switches in Figures) optically couple the optical switch unit (switches in Figures) to the first optical carrier and the second optical carrier.

Shiragaki et al. in view of Cadeddu et al. does not expressly disclose:

said information insertion and extraction devices including optical transponders being configured to change wavelengths of the optical signals.

However, Karasan et al. teaches such transponders (Karasan et al., page 1343, col. 2, last paragraph). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to include the transponders of Karasan et al. in the information insertion and extraction devices of Shiragaki et al. in view of Cadeddu et al. One of ordinary skill in the

art would have been motivated to do this "to arrest accumulating performance-degradations; provide the open, nonproprietary interfaces that permit multivendor interworking; and offer a means of carrying out the performance-monitoring and fault-localization that are essential in deployed networks" (Karasan et al., page 1343, col. 2, last paragraph – page 1344, col. 1, 1st paragraph).

Regarding claim 13, claim 13 is a node claim that corresponds largely to the system claim 5. Therefore, the recited means in system claim 5 read on the corresponding means in node claim 13. Claim 13 also includes limitations absent from claim 5. Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., also discloses these limitations:

a plurality of optical switches (protection switches and path switches in Figures) coupled to the transmitting transponders and the receiving transponders (Karasan et al., page 1343, col. 2, last paragraph), one of the optical switches being coupled to the optical transmitter (protection switches FROM NETWORK ELEMENT in Figures), another one of the optical switches being coupled to the optical receiver (protection switches TO NETWORK ELEMENT in Figures),

wherein the optical switches are configured to operate selectively under a normal operating condition and under a failure condition, the transponders using a first wavelength ($\lambda 1$ in Fig. 10) on the first optical carrier (ring 101 in Fig. 10) and a second wavelength ($\lambda 3$ in Fig. 10) that is different from the first wavelength on the second optical carrier (ring 102 in Fig. 10) during the normal condition, the transponders using the first wavelength ($\lambda 1$ in Fig. 10) on the second optical carrier (ring 102 in Fig. 10) and the second wavelength ($\lambda 3$ in Fig. 10) on the first optical carrier (ring 101 in Fig. 10) during the failure condition.

Regarding claim 14, Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., discloses:

The node according to claim 13, wherein the plurality of transmitting transponders include

a first transmitting transponder (transmitting transponder of Karasan et al. for λ1 working optical path of Shiragaki et al. in col. 13, lines 30-32) optically coupled to the first optical carrier (ring 101 in col. 13, line 31) and configured to modulate a signal at the first wavelength (λ1 in col. 13, line 31),

a second transmitting transponder (transmitting transponder of Karasan et al. for λ3 protection optical path of Shiragaki et al. in col. 13, lines 33-35) optically coupled to the first optical carrier (ring 101 in col. 13, line 34) and configured to modulate a signal at a second wavelength (λ3 in col. 13, line 34), and

a third transmitting transponder (transmitting transponder of Karasan et al. for λ1 protection optical path of Shiragaki et al. in col. 13, lines 33-35) optically coupled to a second optical carrier (ring 102 in col. 13, line 35) and configured to modulate a signal at the first wavelength (λ1 in col. 13, line 35),

the plurality of receiving transponders including

a first receiving transponder (receiving transponder of Karasan et al. for λ1 protection optical path of Shiragaki et al. in col. 13, lines 33-35) optically coupled to the second optical carrier (ring 102 in col. 13, line 35) and configured to demodulate a signal having the first wavelength (λ1 in col. 13, line 35),

a second receiving transponder (receiving transponder of Karasan et al. for λ3 working optical path of Shiragaki et al. in col. 13, lines 30-32) optically coupled to the second optical carrier (ring 102 in col. 13, line 32) and configured to demodulate a signal having the second wavelength (λ3 in col. 13, line 32),

a third receiving transponder (receiving transponder of Karasan et al. for λ3 protection optical path of Shiragaki et al. in col. 13, lines 33-35) optically coupled to the first optical carrier

(ring 101 in col. 13, line 34) and configured to demodulate a signal having the second wavelength (λ3 in col. 13, line 34),

Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., does not expressly disclose:

wherein, under the normal condition, the optical switches are configured to connect the optical transmitter to the first transmitting transponder or to the third transmitting transponder, to connect the first receiving transponder to the third transmitting transponder, to connect the second receiving transponder to the optical receiver, and to connect the third receiving transponder to the optical receiver or to the second transmitting transponder.

However, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to configure the optical switches to connect the optical transmitter to the first transmitting transponder or to the third transmitting transponder. One of ordinary skill in the art would have been motivated to do this since the first transmitting transponder is coupled to the λ1 working path and the third transmitting transponder is coupled to the corresponding λ1 protection path. Thus, the optical transmitter has a corresponding working/protection pair of paths, providing fault recovery.

Also, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to connect the first receiving transponder to the third transmitting transponder. One of ordinary skill in the art would have been motivated to do this since these transponders are coupled to the same λ1 protection path; signals on the protection path are passed under the normal condition (bottom of Fig. 9).

Additionally, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to connect the second receiving transponder to the optical receiver. One of ordinary skill in the art would have been motivated to do this since the second receiving

transponder is coupled to the λ3 working path; optical receivers normally receive signals on working paths under the normal condition (bottom of Fig. 9).

Finally, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to connect the third receiving transponder to the optical receiver or to the second transmitting transponder. One of ordinary skill in the art would have been motivated to do this since the third receiving transponder is coupled to the λ3 protection path and the second transmitting transponder is coupled to the corresponding λ3 protection path. Thus, the optical receiver has a corresponding working/protection pair of paths (second and third receiving transponders), providing fault recovery, and these transponders (third receiving transponder and second transmitting transponder) are coupled to the same λ3 protection path; signals on the protection path are passed under the normal condition.

Regarding claim 15, Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., discloses:

The node according to claim 14, further comprising:

another optical transmitter (Cadeddu et al., transmitters 14B and 15A in Figs. 3-6) configured to generate an optical signal that includes information to be transmitted in the network; and

another optical receiver (Cadeddu et al., receivers 14A and 15B in Figs. 3-6) configured to receive an optical signal that includes information that has been transmitted in the network,

wherein the plurality of transmitting transponders includes

a fourth transmitting transponder (transmitting transponder of Karasan et al. for λ3 working optical path of Shiragaki et al. in col. 13, lines 30-32) optically coupled to the second optical carrier (ring 102 in col. 13, line 32) and configured to modulate a signal at the second wavelength (λ3 in col. 13, line 32),

the plurality of receiving transponders including

a fourth receiving transponder (receiving transponder of Karasan et al. for λ1 working optical path of Shiragaki et al. in col. 13, lines 30-32) optically coupled to the first optical carrier (ring 101 in col. 13, line 31) and configured to demodulate a signal having the first wavelength (λ1 in col. 13, line 31).

Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., does not expressly disclose:

during normal condition, the optical switches being configured to connect the first receiving transponder to the third transmitting transponder or to the other receiver, to connect the fourth receiving transponder to the other receiver, and to connect the other optical transmitter to the second transmitting transponder or to the fourth transmitting transponder.

However, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to configure the optical switches to connect the first receiving transponder to the third transmitting transponder or to the other receiver. One of ordinary skill in the art would have been motivated to do this since the first receiving transponder is already connected to the third transmitting transponder (see treatment of claim 14 above) and since the other receiver would provide a means for the node to interface with signals received by the first receiving transponder on the λ1 protection optical path (Shiragaki et al. in col. 13, lines 33-35).

Also, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to connect the fourth receiving transponder to the other receiver. One of ordinary skill in the art would have been motivated to do this since the fourth receiving transponder is coupled to the λ1 working path; optical receivers normally receive signals on working paths under the normal condition (top of Fig. 9)

Additionally, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to connect the other optical transmitter to the second transmitting transponder or to the fourth transmitting transponder. One of ordinary skill in the art would

have been motivated to do this since the second transmitting transponder is coupled to the λ3 protection path and the fourth transmitting transponder is coupled to the corresponding λ3 working path. Thus, the other optical transmitter has a corresponding working/protection pair of paths, providing fault recovery.

Regarding claim 15, Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., discloses:

The node according to claim 14, wherein the first wavelength and the second wavelength (λ1 and λ3 in col. 13, lines 30-35) are selected from a set of transmission wavelengths (λ1- λ4 in col. 13, lines 30-35), the node further comprising:

a plurality of optical add/drop multiplexers (ADMs in Fig. 9) configured to optically couple the transmitting transponders and the receiving transponders to the first optical carrier (ring 101 in Fig. 10) and the second optical carrier (ring 102 in Fig. 10) to feed and extract a subset of wavelengths from the optical carriers, and to bypass remaining wavelengths (λ2 and λ4 in Fig. 10) of the set of transmission wavelengths.

Regarding claims 17 and 19-21, Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., does not expressly disclose:

the optical switches including:

- 2x2 switches and discrete switching components;
- an integrated switching matrix; or
- at least one of opto-mechanical switches, thermo-optical switches, magneto-optical switches, liquid crystal switches, semiconductor switches, electro-optical switches, micro-mechanical switches, and lithium niobate integrated circuit switches.

However, all these various switch configurations are well known and conventional in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the optical switches of Shiragaki et al. in view of Cadeddu et al., further in view

of Karasan et al., include one of these various switch configurations from this broad range of choices. One of ordinary skill in the art would have been motivated to do this to provide design flexibility, thus enabling one skilled in the art to make and use the node of Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., according to one's constraints in costs, space, and time.

Regarding claim 18, Shiragaki et al. in view of Cadeddu et al., further in view of Karasan et al., discloses:

The node according to claim 14, wherein the optical switches include 1 x2 and 2x 1 switches (switches in Figures).

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. **Claims 1-21** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 14-15, 18-22, 25-27, and 29-33 of copending Application No. 09/750,311. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant invention is an obvious variation of the invention defined in the claims of the copending application.

Regarding claims 1-12, claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 of the instant application are claims that correspond closely to claims 1, 2, 4, 5, 6, 14, 15, 18, 19, 20, 21, and 22 of the copending application, respectively. The "system" and "ring network" and "method" in

the claims of the instant application correspond to the "ring network" and the "method" in the claims of the copending application. The notable difference between claims 1-12 of the instant application and claims 1-2, 4-6, 14-15, and 18-22 of the copending application is the presence of extra limitations (copending application, claims 1, 3, and 14) in the claims of the copending application; that is, these extra limitations are absent from the claims of the instant application. Additional differences between claims 1-12 of the instant application and claims 1-2, 4-6, 14-15, and 18-22 of the copending application are minor variations in the claim language; the main limitations are the same. Thus, claims 1-12 of the instant application define a broader version of the invention defined in claims 1-2, 4-6, 14-15, and 18-22 of the copending application.

Regarding claim 13 of the instant application, consider claim 6 of the copending application. The notable difference between the conflicting claims is the presence of the following limitations in claim 13 of the instant application; that is, the following limitations are absent from claim 6 of the copending application:

a plurality of optical switches,

wherein the optical switches are configured to operate selectively under a normal operating condition and under a failure condition, the transponders using a first wavelength on the first optical carrier and a second wavelength that is different from the first wavelength on the second optical carrier during the normal condition, the transponders using the first wavelength on the second optical carrier and the second wavelength on the first optical carrier during the failure condition.

However, claim 6 of the copending application discloses a "reconfigurable optical switch unit" (copending application, via parent claim 3) that corresponds to the plurality of optical switches. A switch unit comprising a plurality of optical switches is well known and conventional in the art. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the switch unit of the copending application comprise

a plurality of optical switches. One of ordinary skill in the art would have been motivated to do this since it is generally easier to construct, maintain, and repair a complex switch unit that comprises a plurality of optical switches than a complex switch unit that comprises a single monolithic switch structure.

Additionally, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to configure the optical switches to operate selectively under a normal operating condition and under a failure condition. One of ordinary skill in the art would have been motivated to do this since the network of the copending application configures the nodes under a normal operating condition and under a failure condition by switching transmissions from a working path to a protection path (copending application, via parent claim 1); the optical switches are obvious candidate components to perform such switching.

Finally, claim 6 of the copending application discloses using a first wavelength on the first optical carrier and a second wavelength that is different from the first wavelength on the second optical carrier during the normal condition (copending application, via parent claim 1) and using the first wavelength on the second optical carrier and the second wavelength on the first optical carrier during the failure condition (copending application, via parent claim 1). Claim 6 of the copending application also discloses transponders (copending application, claim 6). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the transponders perform these uses of the first and second wavelengths on the first and second optical carriers. One of ordinary skill in the art would have been motivated to do this since these transponders are optically coupled to said first and second carrier and are adapted to change the signals' wavelengths (copending application, claim 6).

Summarily, claim 13 of the instant application includes limitations absent in claim 6 of the copending application; claim 13 of the instant application defines a narrower, yet obvious, version of the invention defined in claim 6 of the copending application.

Regarding claims 14-21, claims 14, 15, 16, 17, 18, 19, 20, and 21 of the instant application are node claims that correspond closely to node claims 25, 26, 27, 29, 30, 31, 32, and 33 of the copending application, respectively. The notable difference between claims 14-21 of the instant application and claims 25-27 and 29-33 of the copending application is the presence of extra limitations (instant application, via parent claim 13) in the claims of the instant application; that is, these extra limitations are absent from the claims of the copending application. However, claim 13 of the instant application defines a narrower, yet obvious, version of the invention defined in claim 6 of the copending application (see treatment of claim 13 above).

Additionally, claims 14-21 of the instant application are a set of claims that corresponds to various coherent combinations of the limitations in claims 6, 25-27, and 29-33 of the copending application. The copending application coherently teaches the limitations in claims 6, 25-27, and 29-33. That is, the limitations in claims 6, 25-27, and 29-33 are not divergently taught in the copending application. Therefore, the recited means and steps in various coherent combinations of the limitations in claims 6, 25-27, and 29-33 of the copending application read on the corresponding means and steps in claims 14-21.

Thus, claims 14-21 of the instant application define a narrower, yet obvious, version of the invention defined in various coherent combinations of the limitations in claims 6, 25-27 and 29-33 of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 703-305-6457. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

DSK
May 16, 2003

JASON CHAN
SUPERVISORY PATENT EXAMINER
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